

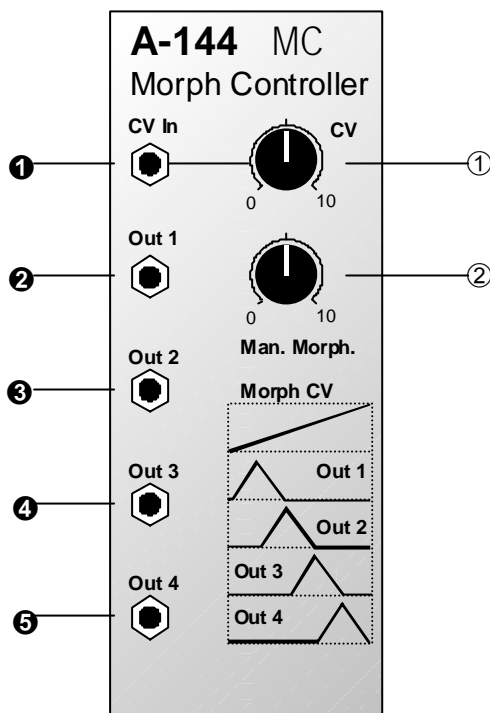
## 1. Introduction

Module **A-144** is an extension module for the **Voltage Controlled Mixer A-135**. It is a so-called **Morphing Controller** that derives from a linear **increasing control voltage** at the input (0...+5V) **four displaced triangle voltages** (0 bis +5 V). These voltages are used as control voltages for the Voltage Controlled Mixer to obtain a fading over ("morphing") the four A-135 audio inputs with only one control voltage fed into the A-144 CV input.

**Morphing** can be **controlled manually** with the manual morphing control and **modulated with an external control voltage** (e.g. from LFO, ADSR, Random, MIDI-to-CV, Theremin, Light-to-CV, analog sequencer) with attenuator.

**Applications:** voltage controlled morphing of 4 audio signals in combination with A-135, e.g. morphing between the **4 waveform outputs of an VCO** (sawtooth/ rectangle/ triangle/ sine) or the **4 filter outputs of the multimode filter A-121** (lowpass/ bandpass/ high-pass/ notch) or the 4 filter outputs of the A-105 (6/12/18/24dB) to obtain a **filter with voltage controlled slope**.

## 2. MC - Overview



### Controls:

- 1 CV : Attenuator for the control voltage at input !
- 2 Man. Morph : Manual morphing control

### In- / Outputs:

- ! CV In : Control voltage input
- " Out 1 : Control voltage output 1 (0...+5 V)
- § Out 2 : Control voltage output 2 (0...+5 V)
- \$ Out 3 : Control voltage output 3 (0...+5 V)
- % Out 4 : Control voltage output 4 (0...+5 V)

### 3. Controls

#### 1 CV

Use attenuator 1 to adjust the **level** of the control voltage at CV input ! affecting the morphing effect.

#### 2 Man. Morph.

Control 2 adjusts the **manual morphing**.

The module generates an internal control voltage that is the sum of the voltage generated by the manual control 2 and the external control ! attenuated with the attenuator 1. This internal control voltage is fed to the 4 internal control voltage modifiers that generate the 4 morphing control voltages appearing at the outputs " to \$.

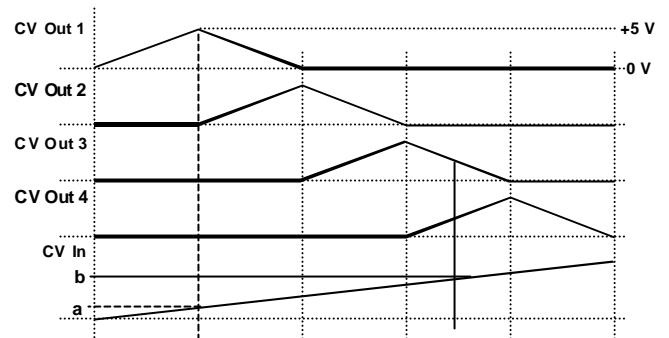
Fig. 1 shows the connection between internal control voltage and the 4 output control voltages. The internal voltage is equivalent to the position of control 2 if no external CV is used, or is equivalent to the external control voltage ! if manual control 2 is set to 0 and attenuator 1 is turned fully clockwise.

E.g. the control voltage "a" has the following effect:

Out 1 = max. (i.e. +5V) • Out 2 = 0 • Out 3 = 0 • Out 4 = 0.

In case "b" the following output voltages appear:

Out 1 = 0 • Out 2 = 0 • Out 3 = 50 % (i.e. +2.5V) • Out 4 = 50 % (i.e. +2.5V).



**Fig. 1:** Connection between internal control voltage (= sum of manual CV and external, attenuated CV) and the resulting output control voltages (range of input and output voltages is 0...+5V)

## 4. In- / Outputs

### ! CV In

The **external control voltage** is fed into the **CV input** ! .

### " Out 1 • ... • % Out 4

The 4 output control voltages are available at the **CV outputs** " to % .

## 5. User examples

### Morphing (standard application)

The patch in fig. 2 shows the typical application of the A-144: the fading over ("morphing") of 4 audio signals in combination with the voltage controlled mixer module A-135.

An increasing control voltage (typical range 0 -> +5V) at the CV input of module A-144 results in continuous "morphing" from audio signal 1 via 2 and 3 to 4.

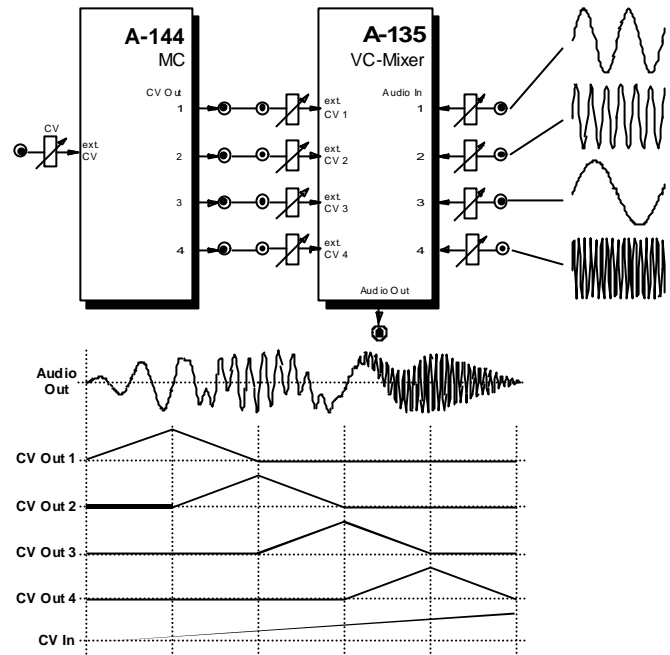


Fig 2: Morphing of four audio signals

Different control voltage sources lead to interesting morphing effects:

**Automatic morphing** can be realized e.g. with LFO (A-145, A-146), VCLFO (A-147), ADSR (A-140), VCADSR (A-141) or analog sequencer (A-155).

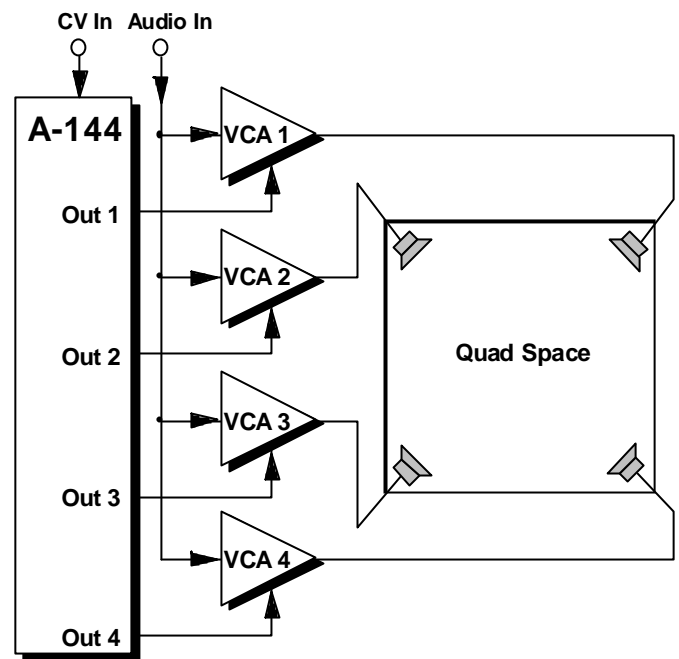
For **manual morphing** e.g. these modules can be used: Theremin (A-178), Light controlled CV (A-179), Foot controller (A-177), Joy Stick (A-174), MIDI-to-CV interface (A-190, A-191, e.g. in combination with modulation wheel or after touch).

### Quadrophonic spatial positioning

In the patch in fig. 3 the A-144 outputs control four VCAs. The audio inputs of the VCAs may be fed with the same or even different audio signals. Each VCA is followed by a separate power amplifier/loudspeaker.

The CV input voltage of the A-144 defines the spatial position of the audio signal in the quadrophonic space. Additional modules like CV-Phasers (A-125) or CV frequency shifters (A-126) may be used to intensify the spatial impression.

A sawtooth control voltage is used to obtain a continuous spatial rotation of the audio signal.



**Fig. 3:** Positioning of audio signals in the quadrophonic hearing space

## 6. Patch-Sheet

The following diagrams of the module can help you recall your own **Patches**. They're designed so that a complete 19" rack of modules will fit onto an A4 sheet of paper.

Photocopy this page, and cut out the pictures of this and your other modules. You can then stick them onto another piece of paper, and create a diagram of your own system.

Make multiple copies of your composite diagram, and use them for remembering good patches and set-ups.

- P
- Draw in patchleads with colored pens.
  - Draw or write control settings in the little white circles.

